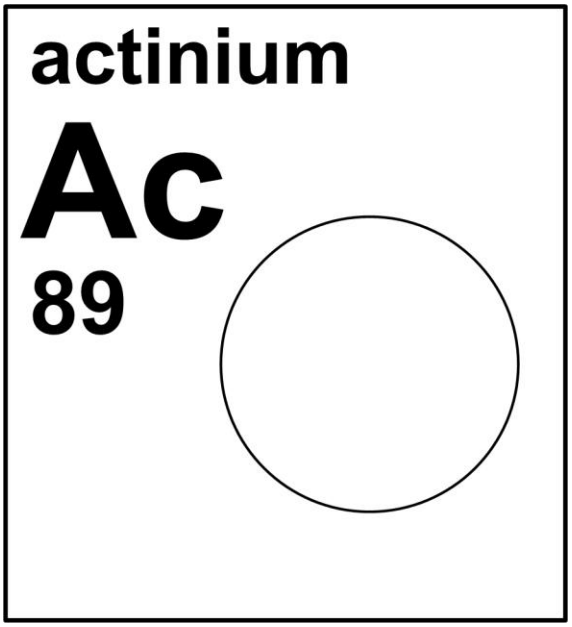
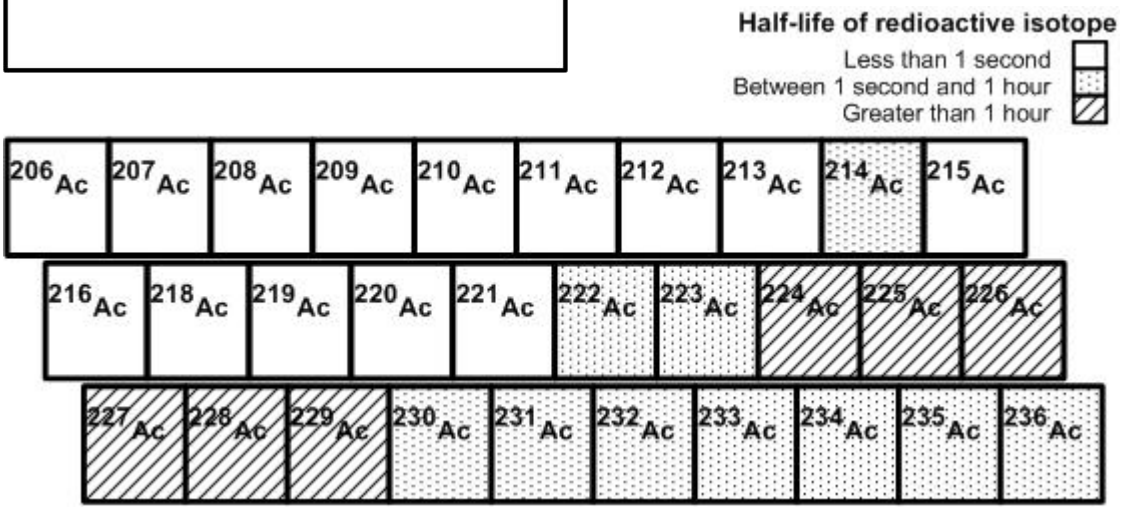
actinium



Stable isotope	Atomic mass	Mole fraction
(none)		



Important applications of stable and/or radioactive isotopes

Isotopes in medicine

1) ^{225}Ac can be used in cancer treatment. The isotope is attached to a chelating agent and delivered to the problem site. The alpha emissions of actinium and its daughter particles cause tumor death.
2) ^{225}Ac decays to ^{213}Bi, which is also used for radio-immunotherapy.

Figure 1: The Medical Actinium for Therapeutic Treatment (MATT) is a separations process which recovers ^{225}Ac from unused nuclear fuel so the isotope can be used in cancer treatment and research.

Isotopes in hydrology

1) ^{227}Ac can be used as a tracer for deep-sea mixing. By determining concentrations of ^{227}Ac in the water columns, scientists can study the rates and patterns of diapycnal mixing and other vertical exchange processes.
2) As an element of a decay chain, ^{227}Ac and other radioisotopes can be used to determine information about fluid flux of cooling ridges and basaltic melt information.

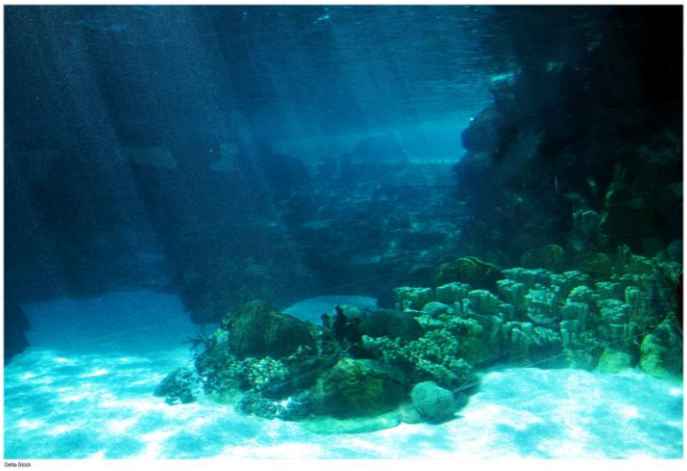


Figure 2: ^{227}Ac can provide information about deep-sea mixing.